

GP-302653

ENGINE WITH DUAL OILING AND HYDRAULIC VALVES

ABSTRACT OF THE DISCLOSURE

An internal combustion engine has a plurality of cylinders containing pistons connected with a crankshaft for transmitting power. The cylinders have closed ends, intake and exhaust ports communicating with the cylinders through the closed ends, valves operable to open and close the ports to air and exhaust flow to and from the cylinders, and a lower end pressure oil lubrication system operative to lubricate at least the cylinders, pistons and crankshaft of the engine. The engine includes hydraulic actuators operable to actuate the valves and forming part of a separate upper end hydraulic oil actuation system operative to selectively supply high pressure hydraulic oil to the hydraulic actuators to actuate the valves in a predetermined manner. Optionally, the hydraulic system may have an oil reservoir within the engine block, such as in the valley between the cylinder banks of a V type engine.

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NUMBER SHEET

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| 10. engine | 60. low pressure oil pump |
| 12. block | 62. pickup tube |
| 14. banks | 64. oil filter |
| 16. cylinders | 66. oil cooler |
| 18. crankcase | 68. main oil galleries |
| 20. oil pan | 70. crankshaft bearings |
| 22. lower sump | 72. oil squirters |
| 24. crankshaft | 74. oil reservoir |
| 26. crankpins | 76. valley |
| 28. connecting rods | 78. transverse wall |
| 30. pistons | 80. oil sump |
| 32. cylinder heads | 82. high pressure oil pump |
| 34. intake ports | 84. pickup tube |
| 36. exhaust ports | 86. oil filter |
| 38. intake manifold | 88. oil cooler |
| 40. exhaust manifolds | 90. hydraulic valve actuators |
| 42. intake valves | 92. timing chain |
| 44. exhaust valves | 94. hydraulic lines |
| 46. valve heads | 96. |
| 47. valve seats | 98. |
| 48. valve stems | 100. |
| 50. valve guides | 102. |
| 52. valve springs | 104. |
| 54. lower end pressure oil
lubrication system | 106.
108. |
| 56. upper end pressure oil hydraulic
system | 110. |
| 58. | |